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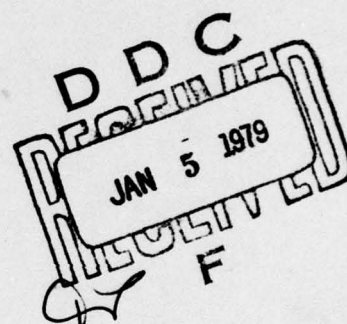
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LEVEL II (1)

**BIBLIOGRAPHY
FOR THE STUDY OF
PROPELLER-INDUCED
VIBRATION IN HULL
STRUCTURAL ELEMENTS**

*See 1473
in back*



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1978

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United States Geological Survey
American Bureau of Shipping



An Interagency Advisory Committee
Dedicated to Improving the Structure of Ships

Address Correspondence to:
Secretary, Ship Structure Committee
U.S. Coast Guard Headquarters, (G-M/82)
Washington, D.C. 20590

SR-1240

AUG 1978

The rapid advance in ship size and power and the trend toward lighter hull scantlings prompted the Ship Structure Committee to investigate the propeller-induced vibrations in the hull and superstructure of the ship. High vibratory forces in the ship can cause discomfort in the living quarters, excessive "panting" type deflection of tank bulkheads, and fatigue cracks in webs and plating.

The first phase of this new project was to conduct a literature search. The bibliography developed is being published separately to be available at the October 15 - 16, 1978, Ship Vibration Symposium, sponsored jointly by the Ship Structure Committee and The Society of Naval Architects and Marine Engineers.

A handwritten signature in dark ink, appearing to read "Henry H. Bell". The signature is fluid and cursive, with the first name "Henry" and last name "Bell" clearly distinguishable.

Henry H. Bell
Rear Admiral, U.S. Coast Guard
Chairman, Ship Structure Committee

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The Ship Design, Response, and Load Criteria Advisory Group prepared the project prospectus, evaluated the proposals for this project, provided the liaison technical guidance, and reviewed the project reports with the investigator:

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FINAL TECHNICAL REPORT

on

Project SR-1240

"Propeller-Induced Vibration in Hull Structural Elements"

BIBLIOGRAPHY FOR THE STUDY OF PROPELLER-INDUCED
VIBRATION IN HULL STRUCTURAL ELEMENTS

by

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Southwest Research Institute

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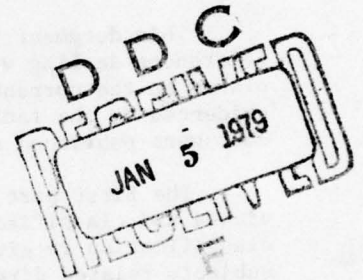
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U.S. Coast Guard Headquarters
Washington, D.C.
1978



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FOREWORD

This bibliography was prepared as part of the effort in Ship Structure Committee Project SR-1240, "Propeller-Induced Vibration in Hull Structural Elements." It is published separately from the final report because it can serve as a ready reference to investigators in the field.

This document is not meant to be an exhaustive bibliography of all references dealing with propeller-induced vibrations. Emphasis has been placed on the current generation of large, high-powered ships. This is evidenced by the fact that of the approximately 550 entries, over 60 percent were published after 1970.

The first part of the bibliography contains references which were reviewed and classified according to content. The nomenclature for this classification is given on page v. A supplemental bibliography covering subjects related directly to ship structures and ship vibration is also included. It contains references that were not reviewed, but which the investigators feel are important to the field. Finally, the bibliography lists references from other technological areas directly applicable to the problem of propeller-induced vibrations in ships.

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PART I: REVIEWED BIBLIOGRAPHY

- a. Cavitation Generated Forces
- b. Design Criteria
- c. Hull Response Prediction
- d. Human Reaction to Vibration
- e. Local Plating Response Prediction
- f. Main Shaft Response Prediction
- g. Propeller Forces and Moments
- h. Propeller Generated Pressures
- i. Propeller Rudder Interaction
- j. Propeller Vibration

PART II: SUPPLEMENTAL BIBLIOGRAPHY

- a. Ship Structures and Vibration
- b. General Structure
- c. General Structural Dynamics
- d. Rotor and Shaft Dynamics
- e. Statistical Energy Methods
- f. Substructuring Techniques

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NOMENCLATURE FOR THE BIBLIOGRAPHY CLASSIFICATION

SUBJECT:

- CGF - CAVITATION GENERATED FORCES
- DC - DESIGN CRITERIA
- HRP - HULL RESPONSE PREDICTION
- HRV - HUMAN REACTION TO VIBRATION
- LPRP - LOCAL PLATING RESPONSE PREDICTION
- MSRP - MAIN SHAFT RESPONSE PREDICTION
- PF - PROPELLER FORCES AND MOMENTS
- PP - PROPELLER GENERATED PRESSURES
- PRI - PROPELLER RUDDER INTERACTION
- PV - PROPELLER VIBRATION

MATHEMATICAL CONTENT:

- VM - VERY MATHEMATICAL
- MM - MODERATELY MATHEMATICAL
- SM - SLIGHTLY OR NON-MATHEMATICAL

TYPE OF PAPER:

- AT - ANALYTICAL
- EX - EXPERIMENTAL
- EXF - EXPERIMENTAL-FULL SCALE
- EXM - EXPERIMENTAL-MODEL
- SU - SURVEY

TECHNICAL UTILITY:

- RD - RESEARCH AND DEVELOPMENT
- DS - DESIGN ORIENTED

ADDITIONAL SYMBOLS

- (XX REF) - NUMBER OF REFERENCES
- (ABS) - REFERENCE CLASSIFIED FROM ABSTRACT

NOTES

1. SUBJECT - CAVITATION GENERATED POWER
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CODE OF ABBREVIATIONS FOR BIBLIOGRAPHY

ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
BSRA	BRITISH SHIP RESEARCH ASSOCIATION
DNV	DET NORSKE VERITAS
DTMB	DAVID TAYLOR MODEL BASIN (NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER)
IHI	ISHIKAWAJIMA-HARIMA HEAVY INDUSTRIES CO. LTD.
IME	INSTITUTE OF MARINE ENGINEERS
INA	INSTITUTE OF NAVAL ARCHITECTS
ISP	INTERNATIONAL SHIPBUILDING PROGRESS
ISSC	INTERNATIONAL SHIP STRUCTURES CONGRESS
JSNA	JOURNAL OF THE SOCIETY OF NAVAL ARCHITECTS
JSNAJ	JOURNAL OF THE SOCIETY OF NAVAL ARCHITECTS OF JAPAN
JSR	JOURNAL OF SHIP RESEARCH
MESJ	MARINE ENGINEERS SOCIETY OF JAPAN
MHI	MITSUBISHI HEAVY INDUSTRIES
NACA	NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS
NECIES	NORTH EAST COAST INSTITUTE OF ENGINEERS AND SHIPBUILDERS
NSRDC	NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER (DAVID TAYLOR MODEL BASIN)
RINA	ROYAL INSTITUTION OF NAVAL ARCHITECTS
RRIAM	REPORTS OF RESEARCH INSTITUTE FOR APPLIED MECHANICS, KYUSHU UNIVERSITY, JAPAN
SIT, DL	STEVENS INSTITUTE OF TECHNOLOGY, DAVIDSON LABORATORY
SNAME	SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS
SSC	SHIP STRUCTURE COMMITTEE
TINA	TRANSACTIONS OF THE INSTITUTE OF NAVAL ARCHITECTS

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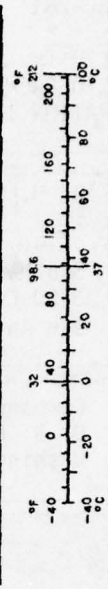
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	meters	m
yd	yards	0.9	kilometers	km
mi	miles	1.6		
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 after subtracting 32	Celsius temperature	°C

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
km	kilometers	1.1	yards	yd
		0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



* 1 in. = 2.54 exactly. For other exact conversions and more detailed tables, see NBS Spec. Publ. 286, Units of Weights and Measures, Price \$1.25, SO Catalog No. C-11,122-66.

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